(a)   setting the temperature of said biological sample to a first temperature and allowing said biological sample to equilibrate at said first temperature before optical data are collected at said first temperature, said first temperature being within the range of from about 0 °C to about 45 °C;

(b)   performing an optical measurement on said biological sample at said first temperature;

(c)   determining at least one optical parameter of said biological sample at said first temperature, said first temperature corresponding to a first depth in said biological sample;

(d)   changing said first temperature of said biological sample to at least a second temperature and allowing said biological sample to equilibrate at at least said second temperature before optical data are collected at said at least said second temperature, said at least second temperature being within the range of from about 0 °C to about 45 °C;

(e)   performing said optical measurement on said biological sample at said at least second temperature;

(f)   determining said at least one optical parameter of said biological sample at at least a second temperature, said at least second temperature corresponding to a second depth in said biological sample; and

(g)   determining said at least one parameter of said biological sample from the functional relationship of said at least one optical parameter on depth in said biological sample, wherein said biological sample comprises intact human tissue.

19.   (Once amended)   A method of measuring at least one parameter of a biological sample having a plurality of layers, said method comprising the steps of:

(a)   setting the temperature of said biological sample to a first temperature and allowing said biological sample to equilibrate at said first temperature before optical data are collected at said first temperature, said first temperature being within the range of from about 0 °C to about 45 °C;

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(b)   performing an optical measurement on said biological sample at said first temperature;

(c)   determining at least one optical parameter of a first layer of said biological sample, said first layer being located at a first depth of said biological sample, said first temperature corresponding to a first depth of said biological sample;

(d)   changing said first temperature of said biological sample to at least a second temperature and allowing said biological sample to equilibrate at said at least second temperature before optical data are collected at said at least second temperature, said at least second temperature being within the range of from about 0 °C to about 45 °C;

(e)   performing said optical measurement on said biological sample at said at least second temperature;

(f)   determining said at least one optical parameter at at least a second layer of said biological sample, said at least second layer being located at at least a second depth of said biological sample, said at least second temperature corresponding to said second depth of said biological sample; and

(g)   determining said at least one parameter of said biological sample from the functional dependence of said at least one optical parameter on depth in said biological sample, wherein said biological sample comprises intact human tissue

37.   (Once amended)   An apparatus for measuring at least one optical parameter of a biological sample, said apparatus comprising:

(a)   a means for irradiating a region of said biological sample with light;

(b)   a means for collecting light re-emitted from said region of said biological sample;

(c)   a means for changing the temperature of said biological sample to a temperature ranging from about 0 °C to about 45 °C so that radiation penetrates to a specified depth in said biological sample,

(d)   a means for measuring the intensity of the collected re-emitted light at a plurality of temperatures, wherein the measured intensities correspond to light re-emitted from different depths of said biological sample; and

(e)   a means for calculating at least one parameter of said biological sample from the dependence of at least one optical parameter on depth in said biological sample, wherein said biological sample comprises intact human tissue.

51.   (Once amended)   The apparatus of claim 37, wherein said at least one optical parameter is indicative of a disease state, wherein said disease state is selected from the group consisting of diabetic state, vascular disease state, dermatological disease state, and neoplasmic disease state.

Cancel claims 7, 14, 25, 32, and 43.